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CHRONICLE OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

The radio communiqués of the International Institute of Agriculture will be transmitted between 2.45 and 2.52 p. m. on the following days: Thursday, English ***and*** German; ***Friday,*** Spanish; ***Tuesday,*** Italian ***and*** French.

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The hour of broadcasts is Central European Time, which is one hour ahead of Greenwich Mean Time, and 5 hours ahead of Eastern Standard Time in the United States.

Permanent Committee of the Institute (March meeting 1939). — This first meeting in 1939 of the Permanent Committee of the Institute opened on Monday, March 6 at 10 a. m.

In addition to the usual items on the agenda – the Secretary General's report on the progress of the work of the different Services, financial and staff questions – the Permanent Committee considered also the following questions: effect given to the Permanent Committee's resolution relating to the establishment of an international Sylvicultural Centre within the International Institute of Agriculture; decision with regard to the international agreements on wine-growers, schedules and names of origin of wines; report of the meeting of experts (Rome, March 2 1939) to discuss scientific and technical questions relating to the control of the import and export of plants and other plant products (Resolution of the London Economic and Monetary Conference, 1933); Report of the International Committee of Statistical Experts in respect of horticultural statistics (Rome, December 1 to 3, 1938); Report of the Mixed Agricultural Advisory Committee (Rome, December 12, 13 and 14, 1937); next meeting of the Permanent Agricultural Committee of the International Labour Office.

Meeting of the Committee of Experts to discuss scientific and technical questions relating to the control of the import and export of plants and other plant products. — The meeting of this Committee of Experts called by the International Institute of Agriculture – after agreement with the Economic Committee of the League of Nations and in collaboration with the Economic Studies Section of the Secretariat of the League of Nations, in order to give effect to the resolution of the London Economic and Monetary Conference (1933) – was held at the Institute, on March 2, 3 and 4 1939.

In addition to the experts specially summoned for the purpose, there were present representatives of the Economic Committee of the League of Nations and of the Permanent Committee of the International Institute of Agriculture. One of the members of the Financial Section of the Secretariat of the League followed the proceedings on behalf of the Secretariat. The Secretary-General of the Institute

took part in the work of the meeting, with the assistance of the Chief of the Bureau of Agricultural Science, the Chief of the Section of Plant Protection, the Director of the Section of Horticulture, one Counsellor and one Principal Redactor.

A brochure prepared by the Section of Plant Protection of the Institute formed the basis of the Commission's work.

On the basis of the conclusions of the "Documentation" prepared by the International Institute of Agriculture, the Committee laid down and approved the general prnciples to be submitted to the Governments for their consideration.

BOOKS PRESENTED TO THE LIBRARY OF THE INTERNATIONAL INSTITUTE OF AGRICULTURE

Agricultural progress. The journal of the Agricultural Education Association. v. 15 (Part III). 1938. Cambridge, W. Heffer & sons, 1938. 220 p.

L'Almanacco degli agricoltori 1939. Anno 23. Roma, « La Rivista agricola », 1939. 208 p.

Amaral Canavarro, J. do. O problema da hipoteca agricola em Portugal. Lisboa, [Impr. Lucas & Ca.], 1938. 105 p. [The problem of agricultural mortgages in Portugal.]

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Annuaire de législation étrangère publié par la Société de législation comparée contenant le texte des principales lois votées dans les pays étrangers en 1934-1936. Paris, Libr. générale de droit et de jurisprudence, 1938. 667 p.

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Botanical Society of Edinburgh. Transactions and proceedings v. 32. Part 3. Session 1937-38. Edinburgh, Neill & co., 1938.

Brdlík, V. Die sozialökonomische Struktur der Landwirtschaft in der Tschechoslowakei, Berlin, F. Vahlen, 1938. 240 p. (Schriften der Internationalen Konferenz für Agrarwissenschaft (International conference of agricultural economists).

British Association for the Advancement of science. Report of the annual meeting, 1938 (108th year). Cambridge, August 17-24. London, 1938.

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INTERNATIONAL BULLETIN
OF PLANT PROTECTION

1939 No. 3

DISCOVERIES AND CURRENT EVENTS *

Italian East Africa: *Locusta migratoria migratorioides* in Eritrea and in Amhara †

Eritrea. During December 1938, further hatchings were noted in the middle zones of Tigrai and the west low-lying plain.

During the first fortnight, swarms were not so numerous as in the preceding months, but towards the end of December they increased in number and size. The zones most seriously affected are still chiefly those of western Tigrai, and to a lesser extent that of Macallé.

A swarm which was reported in the Arafali zone (eastern low-lying plain) and which had commenced egg-laying was entirely destroyed.

In agreement with the General Government of Italian East Africa and with that of the Anglo-Egyptian Sudan, an officer of the Agricultural Bureau of Eritrea was sent to the eastern low-lying plain for the purpose of inspecting the entire coastal zone with a view to ascertaining if there was any possibility of Eritrea being invaded by the desert locust (*Schistocerca gregaria*).

Amhara. The situation is more serious in this region both as regards number of swarms reported and the damage caused to the crops. Here also the species in question is the African migratory locust (*Locusta migratoria migratorioides*).

Most of the districts attacked report that the locusts came from Eritrea across Tacazzé and part of the Anglo-Egyptian Sudan.

As a rule, these swarms have no definite direction; it is noted that they tend to follow a circular movement, and that on settling, they only remain on the ground for brief periods.

Tana is one of the zones most severely attacked, particularly the Gorgorà district.

Control measures. The usual systems of threshing and ditches were employed; when the hoppers had reached the final moulting stage, poison bait gave good results.

* Under this and the third heading the countries are arranged in French alphabetical order.

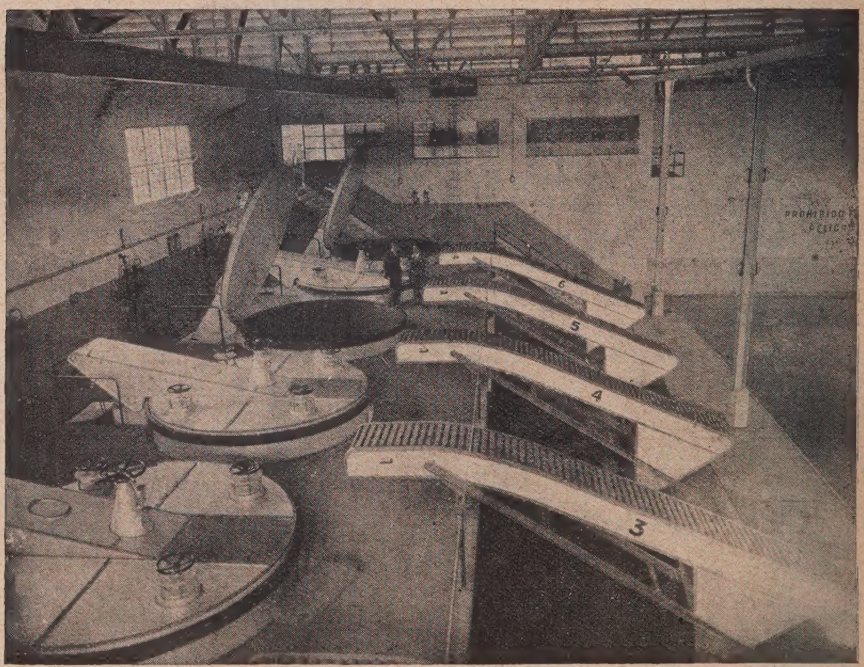
† Communication from Dr. LUIGI M. BOLOGNA, Chief of the Agricultural Bureau of Eritrea, Asmara, transmitted to the Institute by the Government of the Colony.

In Tigrai, as a result of the active assistance of the people, thousands of sacks of Locusts were collected at night.

In Gasc, in the Alalà area, ploughing was extensively carried out in order to destroy egg-pods.

Argentine Republic: A Up-to-Date Equipment for Plant Fumigation in the Port of Buenos Aires *

The installation in the port of Buenos Aires of newly equipped plant disinfection chambers, which was authorized by a Decree of December 9, 1936, is now completed. This important work was carried out by the ' Dirección de Sanidad



General view of plant disinfection equipment

Vegetal ' of the Ministry of Agriculture in conjunction with the Architectural Department of the Ministry of Public Works, the result being a thoroughly up-to-date installation comprising all the latest technical refinements.

This new plant is divided into three independent parts and consists of 6 vertical cylindrical autoclaves made of steel, S. M. 44, with a diameter of 3.50

* Communication from the official correspondent of the Institute, Mr. Juan B. MARCHIONATTO, Agricultural Engineer, Director of ' Sanidad Vegetal ', Ministry of Agriculture, Buenos Aires, Argentine Republic.

metres. Each autoclave has a content of 50 cubic metres, which gives a total content of 300 cubic metres for each disinfection. As many as 4 operations can be carried out daily so that, if necessary, a total of 1,200 cubic metres of vegetable matter can be dealt with in one day. Each autoclave is provided with a movable platform for the reception and discharge of the goods, worked by hydraulic pressure. This pressure is regulated by a revolving oil pump which also serves to open and close the cover of the autoclave.

The apparatus is supplied with 3 vacuum pumps which circulate the disinfectant in the autoclaves; 6 powerful ventilators which disperse any vestiges of gas that may remain in the goods after disinfection; and 6 electric carriers of variable gradients for the reception and discharge of the goods. To facilitate the handling of heavy loads there is an electric crane capable of bearing a weight of 5,000 kg.

The disinfection plant is completed by a laboratory fitted with a small autoclave of a content of 2 cubic metres, and various control apparatus.

The disinfectants most generally used are carbon bisulphide and hydrocyanic acid, the latter either in a liquid state or combined with inert matter. In each case it is generated by reaction, with entirely separate installations.

The serious danger of explosion in the case of carbon bisulphide is neutralized by making use of this disinfectant in a vacuum with the addition of carbon dioxide, which renders it inexplosive. When the disinfection process is completed, the gases are expelled from the autoclave by means of compressors, being forced up a chimney of armoured cement, 30 metres high.

The methods adopted in the disinfection plant described above are the latest and most effective known, while its output capacity is the largest in the world.

These chambers are in a specially constructed building covering an area of 1,600 sq. metres and adjoining the premises for the Port Inspection of Plants in the Federal Capital.

Australia: Aphid Vectors of the Virus of Woodiness Disease of Passion Fruit in New South Wales *

Woodiness or bullet disease of passion fruit (*Passiflora edulis*) is a virus disease which has been described in detail by the author on completion of mechanical infection experiments in 1928.

Now it has been demonstrated that the woodiness virus may be transmitted by *Myzus persicae*, *Macrosiphum solanifolii* and by two other aphids which belong to the group in which are included *Aphis rumicis*, *A. medicaginis*, etc., and in which there is considerable divergence of opinion as to the synonymy of the species concerned. The two dark aphis vectors of woodiness are characterised and designated as *Aphis* sp. A and *Aphis* sp. B.

A paper of the author in collaboration with Mr. N. S. Noble on this subject is expected to be published in the near future.

* Communication from the official correspondent of the Institute, Dr. R. J. Noble, Biologist, Department of Agriculture, Sydney, New South Wales, Australia.

Mozambique: Red Locust *

During October, 1938, swarms of the red locust (*Nomadacris septemfasciata*) were reported in the districts of Tete and Quelimane, Zambezi Province. Some damage was caused to sugar cane and cotton crops in the Quelimane district.

Southern Rhodesia: Locust Invasion, 1932-38 †

Monthly Report No. 72. November, 1938.

Flying swarms of the red locust (*Nomadacris septemfasciata*, Serv.) were reported during the month from nineteen districts in the Colony as follows:—

Mashonaland:—

Bikita, Charter, Chilimanzi, Darwin, Hartley, Makoni, Marandellas, Mtoko, Mazoe, Melsetter, Victoria, and Umtali.

Matabeleland:—

Belingwe, Bulalima-Mangwe, Bulawayo, Chibi, Insiza, and Nyamanadhlovu.

A number of swarms have flown south from Matabeleland into the Northern Transvaal and Bechuanaland. Some of the swarms are assuming the mating colouration (turning yellowish) and the ovaries are developing. Two unconfirmed reports were received at the end of the month that egg laying had taken place though it is considered that egg-laying will not become general for another two or three weeks.

Locust birds, storks and kites, have been seen following many of the swarms.

Some damage to gum plantations, wheat, early maize, vegetable gardens and grazing has occurred.

As few reports have been received and many of the swarms are small, the coming hopper outbreak may be similar to last year's, i. e. on a fairly small scale.

Italian Somaliland: Locusts §

No locusts were reported in the Colony during December, 1938.

* Communication from Mr. ALBERTO COUTINHO SARAIVA, Chief of the Section of Entomology, Lourenço Marques, transmitted to the Institute by the 'Repartição Técnica de Agricultura' of Mozambique Colony.

† Communication from Mr. J. K. CHORLEY, Acting Chief Entomologist, Agricultural Laboratory, Department of Agriculture, Salisbury, Southern Rhodesia.

§ Communication from Dr. MARTINO VIDOTTO, Acting Chief of the Agricultural Services of Italian Somaliland, Mogadiscio, transmitted to the Institute by the Government of the Colony.

VARIOUS QUESTIONS

Standard Method of Control of the Colorado Beetle (*Leptinotarsa decemlineata*) for the Year 1939.

The IVth Conference of the International Committee for the mutual study of the control of the Colorado beetle met at Wageningen, the Netherlands on February 2, 3 and 4, 1939, with the participation of the delegates of Germany, England, Belgium, France, the International Institute of Agriculture, Jersey (Channel Islands), Latvia, Luxemburg, the Netherlands, Poland, Switzerland and Czechoslovakia.

The report of the Conference will be published shortly; meanwhile, we reproduce herewith, in view of its topical interest, the text of the standard method of control of the Colorado beetle, adopted by the Conference:—

I.

For areas with infrequent foci, not attached, the International Committee for the mutual study of the control of the Colorado beetle advocates the following measures:—

(*A*) Patrolling.

In a region contaminated or suspected of infestation patrolling should be intensified from the time the soil temperature exceeds 10° C., the optimum temperature for the emerging of the adults being 14-15° C. Such patrolling should be extended to areas cultivated with potatoes, egg-plants, tomatoes and all cultivated or wild Solanaceae, particularly bittersweet. As soon as the fine days begin, patrolling should be made of all the fields in the locality, particularly where the foliage is most developed. Patrolling becomes all the more necessary when the temperature rises to 20° C. or over during several days.

Patrolling is particularly indicated in the direction of the winds prevailing during the hottest hours of the day (10 a. m. to 3 p. m.).

(*B*) Discovery of the Insect.

(1) Immediate collection and destruction on the spot.

(2) Demarcation of the focus.

(3) Removal of the haulm which should be carefully collected in the centre of the focus.

(4) Breaking up of the soil and careful search for insects by sieving the soil.

(5) Treatment of the soil by injection of carbon disulphide (a minimum of 100 grams per sq. metre), or by spraying with benzol or petroleum (5 litres per m^2).

(6) Distribution of the haulm in the focus.

(7) Repeated treatment of the soil and the haulm with the same products.

Operations (3) to (7) may be substituted by the following:—

(3) Burial of the haulm on the spot at a minimum depth of 60 cm. and spraying with benzol or petroleum.

(4) Sieving of the soil as above.

(5) Treatment of the soil as above.

(8) Immediate treatment of the foliage with an insecticide indicated by the technical Service (such as diplumbic arsenate or calcium arsenate) on all potato fields within a radius of at least 500 metres. Treatment to be repeated, when necessary, two to four weeks later. Eventually, a third treatment.

(9) Inspection and patrolling will be carefully continued after the treatment.

It is recommended to retain the green foliage as late as possible into the autumn and to replant potatoes as early as possible in the spring on the foci to serve as plant-traps.

II.

When infestation has become widespread, the Committee recommends the application of the following measures:—

Extensive prophylaxis by treating all potato crops with an insecticide of which the effect is immediate and lasts for at least 15 days. These treatments will be carried out in the areas and during the periods where invasion is feared; a poison insecticide should be used: diplumbic arsenate or calcium arsenate.

Spraying should be carried out in increasing quantities up to 700-1200 litres per hectare, according to the extent of foliage and the apparatus employed.

Also, to obtain an even distribution of the substance, products which do not easily form a deposit are necessary. The wash should remain homogeneous throughout the period of spraying, usually carried out by means of an apparatus with preliminuary pressure.

As however, treatment cannot be restricted to one chemical compound only, products which do not correspond to the requirements established by the competent official services may be utilized, provided they pass a biological test which proves that they are as effective (immediate and persistant action) as the standard product.

Tests for proving efficacy will be tried out on larvae at the beginning of the fourth stage, and in a sufficiently warm atmosphere (temperature over 15° C during the day).

Curative treatments may be carried out during the course of the season supplementing the preventive measures.

If near market crops or in any other circumstances when the use of an arsenical preparation is not practicable or advisable, contact insecticides (such as rotenone) may be employed. These insecticides should kill off larvae in under twelve hours.

LEGISLATIVE AND ADMINISTRATIVE MEASURES

Belgium * — By Royal Decree of October 5, 1938, the proprietors, farmers or occupiers, are required to control by every possible means, the diseases (fungi, etc) and pests (insects, spiders, etc.) found on their hop crops.

Ministerial Decree will regulate all measures of control considered effective.

If those concerned are unable to employ effective control measures or if these measures are found insufficient, the burgomaster may order spraying of the hop crops in his commune to be carried out officially.

The Governor has the same authority for the whole province and also for any area in the province he may indicate.

United States of America. — For carrying out the purposes of and for expenditures authorized under the public resolution entitled ' Joint resolution making funds available for the control of incipient or emergency outbreaks of insect pests or plant diseases, including grasshoppers [*Acrididae*], Mormon crickets [*Anabrus simplex*], and chinch bugs [*Blissus leucopterus*] ', approved on April 6, 1937 [see this *Bulletin*, 1937, No. 8, p. 180], by public resolution approved on March 2, 1938 is appropriated, out of any money in the Treasury not otherwise appropriated, the sum of $ 2,000,000, to be immediately available and to remain available until June 30, 1939. ([*Public Resolution – No. 81–75th Congress*]. [*Chapter 39–3d Session*], [*H. J. Res. 591*]. [Washington, D. C.], 1938, 1 p.).

*** A joint resolution approved on May 9, 1938 amends the aforesaid joint resolution approved on April 6, 1937. ([*Public Resolution – No. 91–75th Congress*]. [*Chapter 192–3d Session*]. [*S. J. Res. 256*], [Washington, D. C.], 1938, 1 p.).

*** An Act approved on May 23, 1938 provides for an investigation and report of losses resulting from the campaign for the eradication of the Mediterranean fruit fly [*Ceratitis capitata*] by the Department of Agriculture. ([*Public – No. 535–75th Congress*]. [*Chapter 260–3d Session*]. [*S. 842*], [Washington, D. C.], 1938, 1 p.).

*** The revision of the Notice of Quarantine No. 45, on account of the gypsy moth (*Porthetria dispar*) and brown-tail moth (*Nygmia phaeorrhoea* = *Euproctis chrysorrhoea*), and of the rules and regulations (eighth revision) supplemental to the said Notice of Quarantine has been approved on September 28, 1938 and is effective on September 29, 1938.

* Communication from the official correspondent of the Institute, Prof. E. MARCHAL, Director of the State Phytopathological Station, Gembloux, Belgium.

The principal changes in this revision are (1) the release from regulation of certain towns in Coos County, New Hampshire, and parts of the counties of Caledonia, Essex, Lamoille, and Rutland, Vermont; and (2) the transfer from lightly infested to generally infested area of part of Coos County, parts of the Maine counties of Franklin, Kennebec, Oxford, Penobscot, Somerset, and Waldo, and parts of the Vermont counties of Orange, Windham, and Windsor. The Notice of Quarantine as revised provides for modifications of its restrictions in accordance with facts as to pest risk found by the Chief of the Bureau of Entomology and Plant Quarantine and set forth in administrative instructions. (*B. E. P. Q.-Q. 45*, [Washington, D. C.], 1938, 9 pp.).

India. — A press communiqué dated June 23, 1938 informs that the Government of India have decided that the prohibitions and restrictions imposed on the imports of plants, cotton seed, etc., under the Destructive Insects and Pests Act, 1914, and the rules framed thereunder shall be applied to imports from Burma from the 1st August, 1938. (*Agriculture and Live-stock in India*, Delhi, November, 1938, Vol. VIII, Pt. VI, p. 716).

*** By Notification No. F. 46-21/38-A., dated July 26, 1938, in rule 6 of the Order published with the Notification No. F. 320/35-A., dated July 20, 1936 [see this *Bulletin*, 1937, No. 5, p. 94], after the words ' Potatoes shall not be imported into British India by sea ' the words ' except from Burma ' shall be inserted.

The first schedule to the said Order is also modified. (*Ibid.*).

French Indo-China. — By Decree of the High Commissioner at Annam, dated July 8, 1938, approved by the Governor General on the 29th of the same month, the boar is added to the list of wild animals and others detrimental to livestock and crops, the destruction and trapping of which is authorized at any period without permit and without any restriction as regards number. (*Journal Officiel de l'Indochine Française*, Hanoi, 10 août 1938, L^ème année, nº 64, p. 2861).

Italy. — With a view to protecting grain crops, Royal Decree-Law No. 1781 of November 24, 1938 authorizes the capture of sparrows during the sowing period and up to the end of March. (*Gazzetta Ufficiale del Regno d'Italia*, Roma, 30 novembre 1938, anno 79º, n. 273, p. 4940).

Morocco (French Zone of). — The Vizirial Order of October 24, 1938 (29 chaabane 1357), amending the Vizirial Order of May 9, 1933 (14 moharrem 1352) relating to the issue of health certificates for exported plants, parts of plants or plant products [see this *Bulletin*, 1933, No. 9, p. 207] provides for the issue of these certificates when the laws and regulations of the countries of destination require them. These documents will be issued only when application is made to the regional inspector of the Plant Protection Service. (*Bulletin Officiel*, Rabat, 23 décembre 1938, XXVII^e année, nº. 1365, p. 1712).

*** By Order of the Director of Economic Affairs, dated December 3, 1938, article 1 of the Order of the Director General of Agriculture, Trade and Land Settlement, of June 10, 1932 [see this *Bulletin*, 1932, No. 11, pp. 186-187] enacting measures for the destruction of the fruit fly (*Ceratitis capitata*), is amended as follows:—

'The persons designated in article 4 of the Vizirial Order of April 18, 1932 [see this *Bulletin*, 1932, No. 7, pp. 112-113] must collect or cause to be collected, at least once a day, the fruits which have fallen to the ground from the trees, shrubs or plants hereinafter named' (the remainder unchanged). (*Ibid.*, p. 1720).

*** An Order of the Director of Economic Affairs, dated December 13, 1938, modifies the area of activity of the 'Association syndicale de lutte contre le pou rouge [*Chrysomphalus dictoyospermi*] de Foucauld' [see this *Bulletin*, 1937, No. 6, p. 126]. (*Ibid.*, p. 1721).

Mauritius. — The Proclamation No. 19 of September 8, 1938 declares that all pineapples planted on any land within the Colony are infested or suspected of being infested with the mealy bug *Pseudococcus brevipes* Ckll.

In consequence the owner or occupier of any such land shall carry out such written orders as may be issued by the Director of Agriculture from time to time for the treatment of the pest and shall uproot and remove or destroy or cause to be uprooted, removed or destroyed, or shall disinfect or cause to be disinfected or otherwise treated any pineapple plants which may be, or may become infested with the pest, if so ordered by him. (*Legal Supplement to the Official Gazette of the Mauritius Governement, No. 48 of September 10th, 1938*).

New Zealand. — By Special Order made by the Bruce County Council on September 6, 1938, and published by the Minister of Agriculture on October 19, 1938, broom (*Cytisus scoparius*) and gorse (*Ulex europaeus*) are declared noxious weeds within the said County. (*The New Zealand Gazette*, Wellington, October 27, 1938, Numb. 78, p. 2281).

Southern Rhodesia. — By Government Notice No. 456 of September 16, 1938 the Importation of Plants Regulations published in Government Notice No. 462 of August 5, 1932 [see this *Bulletin*, 1933, No. 2, pp. 33-35] have been amended. (*Colony of Southern Rhodesia Government Gazette*, Salisbury, September 16, 1938, Vol. XVI, No. 37, p. 703).

*** By Government Notice No. 460 of same date it is notified that the Minister of Agriculture and Lands has fixed the 1st October, 1938, in respect of the year 1938 as the date by which all cotton plants throughout the Colony must have been destroyed in such manner as to prevent their continuing to grow. (*Ibid.*, p. 704).

Czechoslovakia. — Decree No. 138 of June 1938 modifies Decree No. 40 of February 25, 1938 [see this *Bulletin*, 1938, No. 6, p. 128] relative to measures for preventing the introduction of the Colorado beetle [*Leptinotarsa decemlineata*]. (*Sammlung der Gesetze und Verordnungen des čechoslovakischen Staates*, Prag, 4. Juli 1938, Jahrg. 1938, 45. Stück, S. 587).

Tunis. — A Decree of August 25, 1938 lists the vine-stocks to be used in the preliminary replacing of phylloxera-diseased vines. (*Bulletin de la Direction des Affaires Economiques*, Tunis, 1938, XLII[e] année, 3[e] trimestre 1938, n° 174, p. 291-292).

Union of South Africa. — Proclamation No. 161 of August 4, 1938 specifies the plants considered noxious in the different regions of the Union. (*The Union of South Africa. Government Gazette*, Pretoria, 12 August, 1938, Vol. CXIII, No. 2556, pp. 434-436).

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Appel, O[tto]. (Herausgegeben von). Handbuch der Pflanzenkrankheiten. Berlin, Verlag von Paul Parey, 1939, VI. Bd.: Pflanzenschutz. Verhütung und Bekämpfung der Pflanzenkrankheiten, 3. Lief., S. 577-647 u. [1]-208, Abb. 62-63 u. 1-68. RM. 17.80.
[For the two earlier numbers of the VIth volume, see this *Bulletin*, 1937, No. 6, p. 130 and 1938, No. 11, p. 248.
The third number contains:—
c) Physikalische und chemische Prüfverfahren von G. Hilgendorff und W. Fischer (Forsetzung und Schluss, S. 577-647).
This concludes the first section of volume VI.
The second section contains:
C. Biologische Bekämpfungsmassnahmen von Hans Sachtleben (S. [1] - 120).
Dritter Abschnitt: Die technische Mittel des Pflanzenschutzes.
A. Beizgeräte.
I. Nassbeizgeräte von E. Riehm (S. [121] - 132).
II. Trockenbeizgeräte von A. Winkelmann (S. 132-160).
B. Spritzgeräte von Hermann Zillig (S. 161-208)].

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